

pack within the limited compass of his book. To the busy student who seeks to acquire merely an *aperçu* of the main current in the gradually broadening stream of chemical knowledge, and has but little interest in the personal aspects or human element in the story, the compilation, concise as it is, will be invaluable. Indeed, the author frankly confesses that his book "is designed more especially for those students whose interest in this aspect of the science is stimulated by the inclusion of 'historical chemistry' in the syllabus of examinations which concern them."

The examinee will certainly get a perfect plethora of the facts of chemical history if he steadily works his way through this volume. Even if he is unable to assimilate a moiety of them, he will at least have the satisfaction of knowing that he possesses in Mr. Hilditch's book a trustworthy and fairly comprehensive work of reference, and as such we warmly recommend it to every chemist, whether he be an examinee or not. The book is excellent in plan, and, in spite of its conciseness, eminently readable. Its arrangement readily enables the searcher to discover the origin and date of practically every fact of importance, even without the aid of the synoptical tables and very full index which are appended.

The book differs from all other works of the kind in its modernity. The author is more concerned, apparently, with the chemistry of our own times than with that of any preceding epoch. There are other works which deal more fully with the science of bygone ages, but there is certainly no book in our language which treats of the story of our own age with the same degree of fulness as the volume before us, and we hope that its sale will be such as to encourage the author to maintain it at its pretty high level of completeness.

THE ANOPHELINE MOSQUITOES OF INDIA.

A Monograph of the Anopheline Mosquitoes of India.

By Dr. S. P. James and Dr. W. G. Liston. Second edition, rewritten and enlarged. Pp. viii+128+xv plates. (Calcutta: Thacker, Spink and Co.; London: W. Thacker and Co., 1911.) Price 16 rupees net (25s. net).

THE second edition of this work has been long looked for, and we now welcome it in much the same guise as before; for, although "enlarged," it has actually fewer pages than the first edition, the enlargement apparently referring to new plates, though the number of coloured plates remains the same as before. These coloured plates are so excellent that it is a pity that their number could not have been increased. In our opinion the outstanding merits of this book are the clearness of the descriptions and figures, and the provision of very good analytical tables.

We are glad in this edition to see Theobald's scale classification adopted as a first step in arranging the Indian anophelines in their proper zoological position. The authors are quite justified in their criticism of a good deal of scale nomenclature and their admirable plates of scales are a welcome addition, but their division of scales into "false" and "true" is hardly a happy one. In our opinion, "striate" and "non-

striate" would have been better terms. In their attempts at revision of specific and generic names, the authors are a law unto themselves. It is not merely a question of nice judgment on the evidence for and against such a name, but there are violations of well-understood and accepted rules. We could give numerous examples of this, but one must suffice. Thus a certain African anopheline bears the name *Nyssorhynchus maculipalpis* (Giles). The authors accept Theobald's opinion that the so-called Indian *maculipalpis* is different; they therefore "change" the name of the Indian species to *maculipalpis* (James and Liston). This substitution of their name is, of course, no change at all, but it leaves us with two identical specific names in the same genus. A new name for the Indian species is imperative. We would appeal to the authors to consider this question of nomenclature, and to study carefully the laws governing it, and then publish a list of Indian anophelines with their synonyms. It is their duty to acquaint themselves with the matter fully, even down to the correct way of writing a specific name and its author.

We suppose the method advocated (p. 26) for mounting a collection of mosquitoes has advantages, or it would not have been adopted by the Central Malarial Bureau, but it certainly seems cumbersome, and to fasten nine different objects on to a board with *elastic bands* must sooner or later, in India of all places, spell certain disaster, *i.e.* loss of some of the objects.

Although the book contains an index of specific names, yet generic ones are omitted, and the general index of the first edition has disappeared—a distinct loss. We have noted several erroneous references to plates; *e.g.* three out of five on p. 7 are wrong. As is evident from reading the book, much work remains to be done on the male genitalia, larval stigmata, and eggs, and indeed on the whole bionomics of the Indian anophelines, but this will, we hope, now soon be remedied in India. The book has not, then, reached that ideal standard of excellence we had hoped for, but it must in justice be said, and this is a very practical point, that a worker with this book at his disposal will be able to find out with ease which of the some three dozen Indian anophelines his may be, although in several cases he will certainly be giving them erroneous names.

MINERALS OF RHODESIA.

The Mineral Industry of Rhodesia. By J. P. Johnson.

Pp. iv+90. (London: Longmans, Green and Co., 1911.) Price 8s. 6d. net.

THIS book is specially addressed to the prospector, and gives a good deal of information as to the occurrence of gold and minerals of economic value that have been worked in Rhodesia, the conditions under which they have been found, and mines of importance with their yields. It also gives an account of the occurrence of tin in other mines of South Africa outside Rhodesia, where minerals have been worked which the author thinks might reasonably be expected within the limits of the colony itself.

Gold has proved, up to now, the most important of

the metals mined, a value of 2,508,200*l.* having been recovered in 1910. It occurs chiefly as free gold, but alloyed with a varying quantity of silver, and is found disseminated through various rocks, *e.g.* granite syenite, granulite, various schists, ironstone, and quartzite; but quartz veins traversing various rocks are the dominant gold carriers, all situated close to the granite contact. These veins vary greatly in width, and also in yield, the average yield for 1910 being 30*s.* 9*d.* per ton milled.

Nearly all the mines are situated on old native workings, and the quantity of gold taken from these workings, which sometimes attain a depth of over 200 feet, must have been considerable.

The blunders of pioneer mining companies and resultant financial difficulties have furnished a rich harvest for tributers, who have made handsome profits.

In a large number of the reefs a serious falling off in values is encountered at the water level, their payability down to that point apparently being due to secondary enrichment.

The conditions of Rhodesia are not favourable to the formation of extensive alluvial deposits, and very little gold has been derived from that source.

Other metals than gold are coming increasingly into prominence. Chromite has been mined continuously and with a progressive output since 1905 from a hill of the mineral at Selukwe, the output in 1910 being 44,000 tons, of a value of 98,130*l.*, most of the mineral being shipped to America.

Wolfram and scheelite have been produced in the Buluwayo and Hartley districts of a total value of 10,930*l.*

Nickel and cobalt have not been found, but the author describes their mode of occurrence and the characters of the minerals at Sudbury and New Caledonia as a guide for prospectors.

Copper ores are very widespread in Rhodesia, and the author describes the Kansanshe, Bwana M'Kubwe, and Umkondo and Alaska deposits, on all of which there have been extensive old workings, those on the Alaska extending in an almost unbroken line for about 1700 feet with an extreme width of 660 feet, and have been proved to go down in some places to a depth of at least 70 feet. The copper so far exposed is mainly in the form of malachite, the sulphide zone not having yet been reached. It is disseminated through a crushed belt of limestone.

Lead and zinc are found as an enormous body in the well-known occurrence at Broken Hill, which is remarkable for the large development of phosphates of lead and zinc within the zone of oxidation. The Penhalonga Gold Mine has yielded lead as a by-product.

Molybdenite occurs on the farm Appingadam. Bismuth and antimony have only as yet been found in Rhodesia with the gold ores rendering them refractory. The output of silver is obtained mainly as a by-product in the treatment of gold ores, and partly from the argentiferous galena of the Penhalonga Mine, but no true silver minerals have as yet been found.

A chapter is also devoted to the non-metalliferous minerals of Rhodesia, which, while interesting, space

does not permit us to notice, and the book concludes with a chapter giving hints to prospectors which they will find of interest.

Generally speaking, the book is clearly written, and contains a good deal of information; it should be in the hands of anyone who is devoting his attention to prospecting in Rhodesia.

THE FOUNDATIONS OF SCIENCE.

Die logischen Grundlagen der exakten Wissenschaften. By Prof. Paul Natorp. Pp. xx+416. (Leipzig and Berlin: B. G. Teubner, 1910.) Price 6.60 marks.

Probleme der Wissenschaft. By Federigo Enriques. Uebersetzt von Kurt Grelling. Erster Teil, Wirklichkeit und Logik. Pp. x+258+16. Price 4 marks. Zweiter Teil, Die Grundbegriffe. Pp. vi+259-599. Price 5 marks. (Leipzig and Berlin: B. G. Teubner, 1910.)

THE publication of these works, and, indeed, of the whole series to which they belong, furnishes further evidence for the revival of the interest in the ultimate problems of science, an interest which becomes very much alive so soon as an important branch of investigation reaches the borders of the knowable, and stands in danger of losing itself in unphilosophic disputations. Such an event is at present taking place in physics in connection with the relativity hypothesis, and before we reach the end of the controversy the logical foundations of science will have been thoroughly overhauled.

Prof. Natorp's work is practically a treatise on the fundamental principles of mathematics. It deals with such subjects as infinity and continuity, direction and dimension as determining pure number, time and space as mathematical structures, and the temporal and spatial arrangement of events. The treatment of the problems touched upon is detailed and thorough, and often leads to very decided (and, let us hope, decisive) pronouncements on present-day problems, as when the author declares it to be impossible to decide between the Euclidean or non-Euclidean structure of our space by means of any imaginable physical experiments. A brief summary of the new Principle of Relativity as formulated by Lorentz, Einstein, and Minkowski concludes a very informing and valuable work.

Prof. Enriques's two volumes are more practical and empirical, and will probably appeal to a wider circle of readers than Prof. Natorp's. The style is vigorous, and sometimes distinctly informal, and for that very reason the book is more readable than is the average work on these recondite subjects. His definition of "reality" is interesting. "Our belief in the reality of a thing," he says (p. 85), "supposes a totality of sensations which follow invariably upon certain conditions arbitrarily provided." This, as the author himself perceives, does not eliminate the possibility of a complex hallucination, unless we assume that the will is entirely in abeyance during hallucination. Those who prefer to regard reality as simply the "hallucination" common to the majority of mankind